

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently amended) A chemical reaction monitoring system for parallel monitoring of a plurality of chemical reactions, said system comprising:

a plurality of wells, each well of said plurality of wells comprising a ~~reagents~~ reagent for a chemical reaction;

a lighting device for illuminating the plurality of wells;

a camera device configured to obtain an image of the plurality of wells

an analyzer program for determining a specific value corresponding to the extent of chemical reaction within each well at the time the image was obtained;

an analyzer program for determining whether a difference between a value expected if the chemical reaction is successful and said specific value indicates failure of the chemical reaction within a well; and

a dispensing device configured to ~~deliver reagents to wells where failure of the chemical reaction is not indicated~~ discontinue reagent delivery to one or more wells where failure is indicated while maintaining reagent delivery to wells where failure is not indicated.

2. (Original) The chemical reaction monitoring system of claim 1, wherein the chemical reaction is oligonucleotide synthesis.

3. (Original) The chemical reaction monitoring system of claim 1, wherein said plurality of wells comprises a multi-well plate.

4. (Original) The chemical reaction monitoring system of claim 1, wherein said lighting device comprises a light emitting diode (LED) array.

5. (Original) The chemical reaction monitoring system of claim 4, wherein said LED array includes a first array and a second array positioned on either side of a multi-well plate-viewing window.

6. (Original) The chemical reaction monitoring system of claim 4, wherein said LED array includes a single array positioned pivotally mounted on one side of a multi-well plate-viewing window.

7. (Original) The chemical reaction monitoring system of claim 1, wherein said camera device comprises a charge couple device (CCD) capable of imaging the plurality of wells simultaneously.

8. (Previously amended) The chemical reaction monitoring system of claim 1, wherein said analyzer program processes said image.

9. (Currently amended) A chemical synthesis system comprising:

- (a) a sample holder placed to support a plurality of wells;
- (b) a liquid dispenser placed to dispense a liquid to said plurality of wells;
- (c) a liquid removal device placed to remove said liquid from said plurality of wells;

- (d) a lighting device for illuminating said plurality of wells;

- (e) a camera device configured to obtain image of said plurality of wells; and

- (f) a computer system configured to:

- (i) determine a specific value corresponding to the extent of chemical reaction within each well at the time the image was obtained;

- (ii) determine whether a difference between a value expected if the chemical reaction is successful and said specific value indicates failure of the chemical reaction within a well; and

- (iii) signaling said liquid dispenser ~~deliver reagents only to wells where failure of the chemical reaction is not indicated~~ to discontinue reagent delivery to one or more wells where failure is indicated while maintaining reagent delivery to wells where failure is not indicated.

10. (Previously amended) The system of claim 9, wherein said computer system is further configured to write specific values to a data storage location.

11. (Previously amended) The system of claim 9, wherein a warning message is generated if said specific values are within a pre-defined range of failure.

12. (Original) The system of claim 9, wherein said liquid removal device comprises a centrifuge rotor for orbiting said plurality of wells about an axis of rotation.

13. (Original) The system of claim 9, wherein said liquid removal device comprises a liquid aspirating tube.

14. (Original) The system of claim 9, wherein the chemical reaction is oligonucleotide synthesis.

15. (Original) The system of claim 9, wherein said plurality of wells comprises a multi-well plate.

16. (Original) The system of claim 9, wherein said lighting device comprises a light emitting diode (LED) array.

17. (Original) The system of claim 14, wherein said LED array includes a first array and a second array positioned on either side of a multi-well plate-viewing window.

18. (Original) The system of claim 14, wherein said LED array includes a single array positioned pivotally mounted on one side of a multi-well plate-viewing window.

19. (Original) The system of claim 9, wherein said camera device comprises a charge couple device (CCD) capable of imaging the plurality of wells simultaneously.

20-28. (Canceled)

29. (New) The system of claim 1, wherein said one or more wells is a subset of wells where failure is indicated.

30. (New) The system of claim 1, wherein reagent delivery to said one or more wells is resumed if one or more criteria are met.

31. (New) The system of claim 2, wherein reagent delivery to said one or more wells is resumed if the value of the synthesis is greater than the cost of the synthesis.

32. (New) The system of claim 1, wherein the value expected if the chemical reaction is successful and said specific value each comprise a plurality of measurements.

33. (New) The system of claim 32, wherein failure is indicated if the difference between the value expected if the chemical reaction is successful and said specific value comprises an increasingly negative slope.

34. (New) The system of claim 9, wherein said one or more wells is a subset of wells where failure is indicated.

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35. (New) The system of claim 9, wherein reagent delivery to said one or more wells is resumed if one or more criteria are met.

36. (New) The system of claim 14, wherein reagent delivery to said one or more wells is resumed if the value of the synthesis is greater than the cost of the synthesis.

37. (New) The system of claim 9, wherein the value expected if the chemical reaction is successful and said specific value each comprise a plurality of measurements.

38. (New) The system of claim 37, wherein failure is indicated if the difference between the value expected if the chemical reaction is successful and said specific value comprises an increasingly negative slope.